

**Abstract****Improvements in or relating to Particle Detectors**

A charged particle detector is provided for use in an electron microscope. The detector has a chamber for receiving charged particles generated by the interaction between a particle beam generated by the microscope and the sample. The chamber is maintained at at least a partial vacuum and contains an impact responsive sensor for detecting particles incident thereon. An accelerating electrode field is set up in the chamber by one or more electrodes, and the chamber is sealed by an electronically conductive barrier so as to prevent gas leaking into the chamber, whilst being sufficiently thin to enable charged particles to travel across the barrier and thereby be detected by the detector. The electrically conductive barrier enables a very large accelerating voltage to be used without causing discharge through any gaseous medium in the microscope sample chamber.

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